

The asymmetry of the brain is remarkable: the large ganglionic cells are most abundant in the centre behind the middle, and from there to the posterior side of the brain a median line is slightly indicated by the arrangement of the nucleogenous bodies. The tract composed of large nerve-fibres with scattered ganglionic cells on the left side is very much more extensive than on the right.

Comparison with the Brain of other Arthropods.—So wholly unlike, in its form, in the want of antennal nerves, and in internal structure, is the supracæsophageal ganglion or “brain” of *Limulus* to that of insects and the higher Crustacea, that it is very difficult to find any points of comparison.

Histologically, judging by my specimens of the brain of the lobster which are stained with carmine, the brain of *Limulus* agrees with that of other Arthropods in having similar large ganglion-cells; the smaller ganglion-cells, so abundant in the brains of insects and crustacea, are wanting in *Limulus*. There are in *Limulus* no “ballen-substanz” masses homologous with those of the other Arthropods.

Topographically the internal structure of the brain of *Limulus* is arranged on a wholly different type from that of any other Arthropodous type known—so much so that it seems useless to attempt to homologize the different regions in the two types of brain. The plan is simple in *Limulus*, much more complex in Arthropods, especially in the brain of the crawfish as worked out by Krieger, as in the Decapodous brain there arise two pairs of antennal nerves besides the optic pair; and in external form the two types of brain are entirely unlike. The symmetry of the brain of the crawfish, as of the lobster and insects, is marked throughout, each hemisphere exactly repeating in its internal topography the structure of the opposite side; that of *Limulus* is obscure and imperfect.

VII.—On a new Species of Chiton lately found on the British Coasts. By J. GWYN JEFFREYS, LL.D., F.R.S.

*Chiton scabridus**.

BODY thin, semitransparent, of a blood-red colour: *mantle* dirty white: *mouth* small: *foot* lanceolate, only one third the width of the body, tapering rather gradually to a fine point; the sole is marked lengthwise by six red lines, which are

* Rough.

wider and closer together on each side than in the middle; between the foot and the mantle are red patches corresponding with the plates of the shell, and united by a continuous but irregular red line that encircles the body within the mantle: *gills* unequal in length: *girdle* of moderate width, covered with small regular and close-set yellow roundish-oval granules; margin fringed with numerous short spines.

SHELL oval-oblong, somewhat depressed, of a dull hue: *plates* narrow; all except the terminal ones are nearly equal in width; the lateral compartments in each valve are indistinct, and not raised above the middle portion: *sculpture* consisting of minute tubercles, arranged in several longitudinal rows, which are distinctly defined in the middle, and radiate or diverge to the margin on the lateral and terminal spaces; there is no central ridge: *colour* yellowish brown: *beaks* inconspicuous, except on the tail-plate: *inside* glossy, furnished towards each side of all the plates, except the head-plate, with obtusely triangular leaves, which serve to interconnect the plates; margin slightly and irregularly notched. L. 0·2125. B. 0·125.

Hab. Goodrington, Torbay (*Mr. Pidgeon*); Jersey (*Mr. Duprey*). It appears to be rare. I received this species first from Mr. Pidgeon, and considered it a variety of *C. cancellatus*; but subsequent communications from Mr. Duprey have induced me to alter my former opinion. For the description of the animal I am indebted to Mr. Duprey. The shell is not convex or gibbous like that of *C. cancellatus*, and it is somewhat broader in proportion to the length; the rows of tubercles are half the number, and the tubercles are more raised and much coarser, giving a rough or scabrous aspect to the shell; the granules which cover the girdle are more regular in shape and arrangement; and there are some differences in the animal, which are shown by comparing the description of the present species with that of *C. cancellatus*, in the fifth volume of 'British Conchology,' p. 198. Mr. Duprey tells me that he finds *C. scabridus* with *C. cancellatus*, as well as *Rissoa lactea* and *R. striatula*, in the lower part of the littoral zone, living underneath stones. This is a remarkable habitat, and is shared also by *Adeorbis subcarinatus*.

I cannot adopt the artificial system proposed by the late Dr. Gray, Dr. Philip Carpenter, and Messrs. Adams in generically separating our species of *Chiton*. In 'The Genera of Recent Mollusca' *Chiton marmoreus*, Fabricius (under the name of *C. levigatus*, Fleming), is placed with *C. cancellatus* in the genus *Leptochiton* of Gray, because the "mantle-margin" (girdle) is said to be "covered with minute, gra-

nule-like, round, smooth scales, not imbricate;" while *C. marmoreus* is again placed in the genus *Tonicia* of Gray, which is described as having the "mantle simple, horny, naked, smooth, or glabrous." *C. mediterraneus*, Gray (probably meant for *C. siculus*, Gray, = *C. olivaceus*, Spengler), is placed in both the genera *Lepidopleurus* of Risso and *Leptochiton*. *C. Hanleyi*, Bean, = *C. mendicarius*, Mighels, has the same kind of sculpture as *C. scabridus*, and belongs to the genus *Chaetopleura* of Shuttleworth.

I may mention that *C. cancellatus* was sent me by the late Professor Sars as his *C. alveolus*; but the latter, as since described and figured by his no less eminent son, is a different species.

VIII.—*Report on Specimens dredged up from the Gulf of Manaar and presented to the Liverpool Free Museum by Capt. W. H. Cavne Warren.* By H. J. CARTER, F.R.S. &c.

[Continued from vol. v. p. 457.]

[Plates IV.-VI.]

SPONGIDA.

The descriptions of the Spongida found in and about the Melobesian nodules from the Gulf of Manaar will, so far as they go, be arranged after the classification proposed in my "Notes," &c. ('Annals,' 1875, vol. xvi. p. 128 *et seq.*); so to this I must refer the reader for the characters of the orders &c. respectively.

In the measurement of the spicules it should be remembered that their form is of much more consequence than their dimensions, as the latter may vary:—1st, in different specimens; 2nd, in the same specimens (as they present themselves under all degrees of development); and 3rd, in the same species, where the average largest vary in proportion to their stoutness, the stoutest being the shortest, and *vice versâ*. My measurements are taken from the average largest of the specimens, as *these* may be assumed to represent the ultimate size, and will be given in parts of an inch, for the purpose of conveying an idea of the *relative* rather than the *real* size of the spicules; while, to avoid repetition, it may be stated here, once for all, that, unless otherwise mentioned, they will refer to the *greatest diameters* of the object. It should not be forgotten that all the specimens are *dry*.